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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,967	07/28/2003	Carlo D. Montemagno	Montemagno 1	4077

7590 05/10/2005  
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Arlington, VA 22202

EXAMINER

FORTUNA, ANA M

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/627,967

Applicant(s)

MONTEMAGNO ET AL

Examiner

Ana M. Fortuna

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1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-14, 21-23 and 26-30 is/are rejected.
- 7) ☒ Claim(s) 5-8, 15-20, 24 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/02/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is redundant, as it repeats the limitation of claim 5.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 11, 12, and 26-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffman et al (5,998,588)(hereinafter '588. Reference '588 discloses the block copolymer matrix having incorporated a membrane protein into said matrix, to form a membrane/protein composite (abstract, column 1, lines 5-30, column 6, lines 30-68, column 8, lines second and third paragraphs) the polymer material as copolymers, e.g. vinyl type copolymers. And block copolymers (column 9, lines 62-68, column 12, lines 34-55), and the protein or membrane protein is also disclosed (column 13, lines 44-68, and column 14, lines 1-5). The protein can be incorporated into the membrane, e.g. microporous membrane by covalent bonding, or can be incorporated into the polymer matrix, e.g. entrapped into the hydrogel (column 21, lines 36-39, column 22,

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lines 54-61). As to claim 3, the membranes as sensor, channels, or energy transducers are disclosed (column 22, lines 29-42, and column 23, lines 55-67). As to claim 4 the membrane is disclosed as separator separating aqueous two-phase system (column 26, lines 26-32).

4. Claims 1, 11, 12, 13, 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Cubicciotti (6,342,389)(hereinafter '389). Reference '389 discloses a sensing device or event including a protein linked to a solid support, e.g. membrane, the device provide an input system for a transducer, deliver light energy, and also can operate as an optical sensor (column 3, lines 19-68 and column 4, lines 10-67). As to claim 23, the protein is a natural protein e.g. algal protein, and biological protein is also disclosed. Using organic and inorganic layers and providing more than one protein by adsorption, encapsulation, controlled deposition, etc. is disclosed in '389 (column 37, lines 35-68, column 50, lines 28-31).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffmann et al ('588) or Cubicciotti ('389) in view of Hamada et al (6,177,181)(hereinafter Hamada). References '588 and '389 fail to disclose the

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membrane material embedded or supported on a fabric. The references above teach membrane providing the protein within the membrane.

Hamada teach the forming membrane by casting the membrane on a fabric support, e.g. pva membrane or copolymers (column 4, lines 47-68, column 5, lines 1-7, and column 10, lines 39-48) It would have been obvious to one skilled in the art at the time the invention was made to cast a membrane on a support, e.g. a fabric material, to reinforce the membrane, as suggested in Hamada for pva membranes or copolymers, and further incorporate the protein within the membrane, or alternatively entrap the protein within the polymer (hydrogel), as suggested in '588.

***Allowable Subject Matter***

7. Claims 5-8, 15-20, 24-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 9-10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the combination of limitations of the claims above are not suggested or disclosed in the prior art of record.

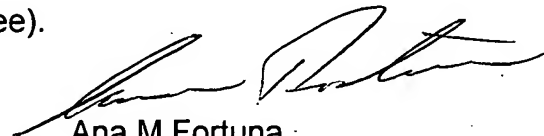
**Conclusion**

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M. Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ana M Fortuna  
Primary Examiner  
Art Unit 1723

Ana Fortuna  
April 29, 2005